AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1-8(cancelled).

9(new). A method of producing hydrogen gas comprising the steps of:

submerging metallic material in water;

while said metallic material is submerged, mechanically generating particles from said metallic material, whereby microscopic cracks are produced in the surfaces of said particles, and hydrogen gas is evolved from within said cracks by a mechano-corrosive reaction;

allowing reaction products of said mechano-corrosive reaction to cause self-propagation of said cracks, thereby causing continued autonomous evolution of hydrogen gas within said cracks; and

collecting the autonomously evolved hydrogen gas.

10(new). The method according to claim 9, in which said particles include particles having a grain size of not more than about 50 μm.

11(new). The method according to claim 9, in which said water is pure water, substantially free of ionic impurities and organic molecules.

12(new). The method according to claim 9, in which said step of collecting the autonomously produced hydrogen gas is carried out throughout a time interval beginning at a time before, and ending after, the rate of autonomous hydrogen gas production reaches a maximum.

13(new). The method of producing hydrogen gas according to claim 9, in which said metallic material is aluminum or aluminum alloy.

14(new). A method of producing hydrogen gas as claimed in claim 13, in which the aluminum or aluminum alloy is industrial aluminum waste.

15 (new). The method according to claim 13, in which the aluminum or aluminum alloy is in the form of cutting chips when said particles are generated therefrom.

16(new). The method according to claim 13, in which said hydrogen gas produced autonomously within self propagated cracks of said particles is collected at least approximately 40 hours after said particles are generated.

17(new). The method according to claim 13, in which said hydrogen gas produced autonomously within self propagated cracks of said particles is collected until substantially all

of said particles collapse, forming particles of aluminum oxide as a final product in addition to hydrogen gas.

18(new). The method according to claim 13, in which said hydrogen gas produced autonomously within self propagated cracks of said particles is collected at least until the interior of said particles is converted to aluminum oxide.

19(new). The method according to claim 13, in which said continued autonomous production of hydrogen gas occurs as a result of at least one of the reactions:

$6Al + 6H_2O \rightarrow 2Al_2O_3 + 2AlH_3 + 3H_2$ and

$Al(OH)_3 + AlH_3 \rightarrow Al_2O_3 + 3H_2$.

20(new). The method according to claim 13, in which said particles include particles having a grain size of not more than about 50 μm.

21(new). The method according to claim 13, in which said water is pure water, substantially free of ionic impurities and organic molecules.